



EN / AIR CONDITIONING / TECHNICAL DOCUMENTATION

INSTALLATION INSTRUCTIONS

COOLTRONIC 2000 PLUS

Engine-independent air-conditioning system for parked vehicles

Designation

Cooltronic 2000 Plus

Universal installation kit for Cooltronic 2000 Plus

Order No.

81.0000.17.0000

81.0000.17.2000

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1 Introduction

1.1 Please read through this document and keep it for future reference

Before installing and starting up the product, please always read through this document carefully. The document contains important information necessary for installation and operation.

Please keep this document safe for later reference.

1.2 About this document

This document helps the installation workshop to install the Cooltronic air-conditioning unit and provides the operator with information about the product.

1.3 Special text structure, presentation and picture symbols

Special text formats and picture symbols are used in this document to emphasise different situations and subjects. Refer to the following examples for their meanings and appropriate action.

1.3.1 Special text formats and presentations

- This dot (•) indicates a list or action step, introduced by a heading.
 - If an indented dash (–) follows a “dot”, this list is a sub-section of the black dot.
- Underlined blue text denotes a cross-reference, which can be clicked in the PDF format. The part of the document named in the text is then displayed.

1.3.2 Picture symbols

Safety instructions in this document are identified by symbols. The safety instructions are introduced by signal words, which express the extent of the hazard.

DANGER!

“Danger” indicates a situation that can directly result in death or serious injuries if not avoided.

→ This arrow indicates the appropriate measures to avert the imminent danger.

WARNING!

“Warning” indicates a situation that can potentially result in death or serious injuries if not avoided.

→ This arrow indicates the appropriate measures to avert the potential danger.

CAUTION!

“Caution” indicates a situation that can potentially result in minor or slight injuries if not avoided.

→ This arrow indicates the appropriate measures to avert the potential danger.

NOTE

“Note” indicates potential problems during installation, maintenance or operation, gives recommendations for use and important tips for installation, operation, maintenance and repair.

REGULATION!

“Regulation” indicates statutory regulations or a directive.

Failure to follow these regulations or directive results in expiry of the type-approval for the product and exclusion of any guarantee and liability claims against Eberspächer Climate Control Systems GmbH.

1.4 Intended use

The Cooltronic air-conditioning unit is intended for installation in drivers' cabs of utility vehicles, in order to air-condition their interior with cooled and dehumidified air. It enables engine-independent thermal comfort in the driver's cab during breaks.

NOTE

- The air-conditioning unit may only be installed and operated for the range of application stated by the manufacturer in compliance with the Documentation included with every air-conditioning system.

Intended use also includes compliance with all information in the documents accompanying the product such as:

- the technical documentation
- the catalogues and brochures
- in addition the relevant national laws and directives

1.5 Non-intended use

The Cooltronic air-conditioning unit is not intended for installation in off-highway applications such as construction machines, agricultural or mining machines or similar working equipment being exposed to heavy vibrations, as well as the application in salt mines or in any other chemically aggressive environment. This non-intended use and any other use of the product extending beyond or differing from its intended use is deemed to be misuse. Failure to comply makes the guarantee null and void and this leads to the exclusion of any liability of Eberspächer Climate Control Systems GmbH.

DANGER!

DANGER IN CASE OF MISUSE!

Misuse and / or improper configuration, installation, modification, maintenance or repair of the product can result in hazardous situations.

- Never use product arrangements or configurations that are not approved by the manufacturer.
- Never carry out installation, modification, maintenance or repair steps that are not approved by the manufacturer.
- Never use spare or accessory parts that are not original or approved by the manufacturer.

1.6 Limitation of liability

All data and information in this document has been compiled taking into consideration the relevant laws, directives, guidelines, standards and regulations, the state-of-the-art and many years of knowledge and experience.

1.6.1 General limitation of liability

- The manufacturer is not liable for damage caused by disregard of the technical documentation or technical data and/or the safety instruction, non-intended use or incorrect operation.
- Third party claims against the manufacturer due to misuse or the failure of the trade, the installation workshop or operator to meet their duty to instruct will be passed on accordingly.
- The obligations agreed in the supply agreement, the general terms and conditions of business and the supply conditions of the manufacturer apply, and the statutory provisions applicable at the time at which the contract was concluded.
- The guarantee only extends to original components of Eberspächer Climate Control Systems GmbH.
- We reserve the right to make any changes as part of the improvement of performance characteristics and further technical development.

1.6.2 Product-specific limitation of liability

- Any manipulation whatsoever of the system fill of this product is impermissible. Failure to comply will invalidate the warranty and any liability of Eberspächer Climate Control Systems GmbH is excluded.
- Connecting the power supply to a connection point specified in the installation instructions is absolutely necessary, otherwise the electronics can become irreparably damaged. Failure to comply makes the guarantee null and void and this leads to the exclusion of any liability of Eberspächer Climate Control Systems GmbH.

1.7 Important information before starting work

- Read and follow the instructions given in this document before and during installation. The document contains important information necessary for the installation.
- In case of installation or repair, use only original accessory parts and original spare parts of Eberspächer Climate Control Systems GmbH.
- The product may only be installed by a service centre authorised by the manufacturer and according to the requirements in these installation instructions and possible special installation recommendations; the same applies to any repairs to be carried out or dealing with guarantee claims.
- Always discuss any modification work to the vehicle's roof spoiler, which is necessary due to installation of the air-conditioning system, with the customer and have such work approved by the vehicle manufacturer.
- If the vehicle does not have a roof hatch and it is necessary to cut open the cab roof, or if the existing structure is not sufficiently stable (e.g. if it is made of fibre-reinforced plastic, etc.), in consultation with the customer, the installer must decide whether the cab roof has to be reinforced to avoid deforma-

tions, fractures, leaks, etc.

- Before installing, check that the maximum vehicle height given in the vehicle documents is not exceeded following installation of the system.
- Before carrying out the installation, clarify with the vehicle manufacturer,
 - whether the driver's cab is designed for the static and dynamic loads imposed by the air-conditioning system in a vehicle that is moving.
 - whether installation of the air-conditioning system requires a change to the vehicle height in the vehicle documents.
 - whether the installation of the air-conditioning system could possibly damage vehicle components or impair their function.
- Only use the control units approved by Eberspächer Climate Control Systems GmbH to operate the system. Do not use other control units.
- When installing the air-conditioning system protect the cab roof with a cloth or blanket to prevent scratches.
- Use suitable tools for each work step.

Tools

Hexalobular (6 lobe) internal key wrench (Torx®), Hexalobular (6 lobe) internal key wrench, size 8, 10, 13 key wrenches, **Phillips screwdriver, torque spanner, hacksaw, multimeter**, scissors, metre rule.

1.8 Reference documents

NOTE

- The operating instructions for this product are available in their current version on the Eberspächer website and can be downloaded: <https://www.eberspaecher.com/downloadcenter>
- The repair instructions and the spare parts lists for this product are available in their current form on the Eberspächer partner portal and can be downloaded here: <https://partner.eberspaecher.com>

1.9 Impermissible measures

- The following measures are not allowed:
 - Changes to components
 - Any manipulation to the system refrigerant fill
 - Repairs by unauthorised third parties and/or with non-original spare parts.
 - Use of third-party components not approved by Eberspächer Climate Control Systems GmbH.
 - Installation or operation deviating from the safety and / or functionally relevant specifications stated in this document. This especially applies to the electrical wiring.
- The above-named impermissible measures cause the type-approval of the Cooltronic air-conditioning to become null and void; consequently, when installed in motor vehicles they can cause expiry of the vehicle operating licence.

1.10 Before the initial commissioning, check

- Compliance with the vehicle manufacturer's data regarding the electrical connection.
- Observance of the official regulations and safety instructions.
- All screw connections are tight.
- The electrical connection is correct.
- The system and panelling have no visible damage.

1.11 Perform the functional test

Following the installation perform a functional test. If the system switches to fault during the functional test, use the repair instructions to determine and correct the cause.

1.12 Statutory regulations

§ REGULATION!

- Compliance with the statutory regulations, the additional regulations and the safety instructions is prerequisite for guarantee and liability claims.
- Failure to comply with the statutory regulations and safety instructions and incorrect repairs, even if original spare parts are used, make the guarantee null and void and this results in the exclusion of any liability whatsoever of Eberspächer Climate Control Systems GmbH.
- The statutory accident prevention regulations and workshop and operating safety instructions are binding and must also be observed in countries which do not have any such special regulations.
- Further installation requirements are printed in the relevant sections of these installation instructions.

- Following the installation, issue all the documents included in the scope of supply to the customer.
- This document is also available to view and to download from the Eberspächer Partner Portal.
- When carrying out electric welding work on the vehicle, disconnect the positive cable at the battery and connected it to ground to protect the product.
- Replace defective fuses only with fuses with the specified fuse rating.
- Do not start up the product if it is visibly damaged.
- Shut down the product immediately if it can be assumed that safe operation is no longer guaranteed.
- Take all measures to prevent accidental putting back into service.
- Do not operate the product near flammable liquids and gases.
- In case of fire, do not remove the top cover of the product; use approved extinguishing media only.
- Before carrying out any work on the product (cleaning, maintenance, etc.) disconnect all connections to the power supply.
- Keep the condensate outlet clear at all times during operation.
- If the unit is tilted during installation or the cab with mounted unit is folded down, at least 60 minutes must pass after restoring the normal horizontal position, before the unit is started up.

i NOTE

All deviations from the safety instructions for installation and operation are to be agreed with the manufacturer in writing. Failure to comply makes the guarantee null and void and this leads to the exclusion of any liability of Eberspächer Climate Control Systems GmbH.

1.13 Safety instructions for installation and operation

⚠ DANGER!

RISK OF INJURY, FIRE AND POISONING!

- Disconnect the vehicle battery before starting any kind of work.
- Switch off the air-conditioning unit before starting any work on the Cooltronic air-conditioning unit.

RISK OF FALLING

- When working on the roof of the vehicle, there is a risk of falling with life-threatening injuries or death.
- Secure your stand with safety harness and safety ropes.
- Use safety platform with safety grid or safety net.
- When working on the roof of the vehicle, a safety harness must be used.



Safety harness

- Remove the ignition key before starting the installation.
- Do not cover air inlet and outlet openings or insert foreign bodies in the openings. Maintain a minimum distance of 10 cm from other additional parts.

2 Cooltronic 2000 Plus

2.1 Product information

Cooltronic 2000 Plus universal installation kit: Order No. 81.0000.17.2000



Picture 1 Scope of supply

No.	Quantity	Designation	Order No.
1	1	Roof hatch cover	On demand
2	1	Bag with small parts (Cocer caps, rubber pads, screws, hexagon nuts, washers)	On demand
3	2	Bracket	On demand
4	1	Seal 30×25 mm	On demand
5	1	Bag with small parts (stud bolts, angle brackets, cable ties)	On demand

2.2 Technical data

Unit designation	Unit	Cooltronic 2000 Plus
Material number		81.0000.17.0000
Cooling capacity in accordance with ISO 5151		1984
Cooling capacity in accordance with GB/T37123 2018/China	W	2020
Refrigerant		R134a (CFC-free)/ prefilled
Refrigerant quantity (max.)	g	330 ±5
Rated voltage	V DC	24 ±0,3
Electricity consumption per hour (min. / max.)	Ah	14,6 / 35,8
Blower levels		3
Air flow rate, fan level 1	m ³ /h	300
Unit dimensions (L×B×H)	mm	786×986×175
Weight (system)	kg	28

CAUTION!

MALFUNCTIONS AND DAMAGE TO THE UNIT

Operating the air-conditioning system outside the technical data can cause malfunctions.

→ Comply with the technical data.

NOTE

The technical data applies at rated voltage and a reference height of 240m above sea level. If no limit values are given the tolerance is ±10 %.

3 Installation

3.1 Outside of the driver's cab

3.1.1 Remove the hatch cover

> Remove the hatch cover and fixing elements.

! CAUTION!

DAMAGE TO THE UNIT DUE TO FRACTURE

Torsion can cause the hatch cover to break when removed.

→ Dismantle the hatch cover carefully and without torsion (Picture 2).



Picture 2

i NOTE

Issue the removed parts to the customer.

3.1.2 Removing adhesive residues

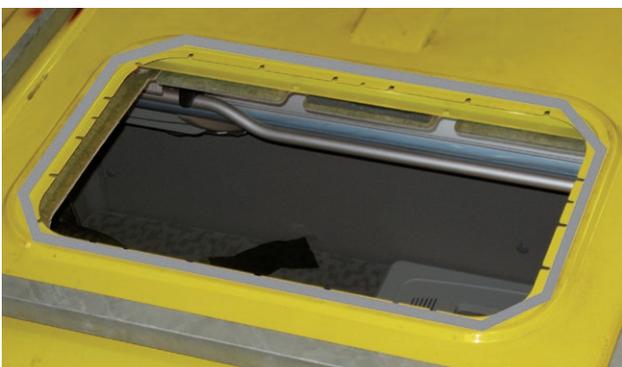
> Before gluing on the seal, remove any adhesive residues from the cab roof (Picture 3)

! CAUTION!

INJURY DUE TO SHARP OBJECTS

Use of sharp objects, e.g. blades, to remove the adhesive residues can cause injuries (Picture 4).

→ Take appropriate protection measures.



Picture 3



Picture 4

i NOTE

The bonding surfaces must be free from dirt and grease before the seal is bonded.

3.1.3 Glue on the seal

> Glue on the seal around the roof hatch opening (Picture 5).

i NOTE

The seal is circumferential and elastic. It can therefore be adjusted to roof hatch sizes from min. approx. 350 x 650 mm to max. approx. 500 x 720 mm.

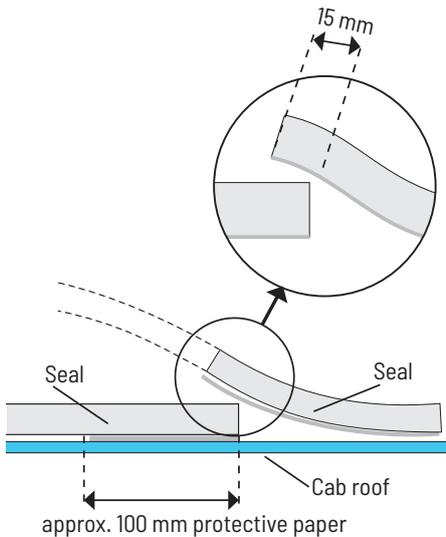


Picture 5

Option: Cut the seal and glue it to the joint

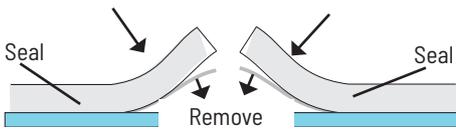
If the roof hatch opening is too small for the circumferential seal, carry out the following steps:

- > Cut the seal at a suitable point with a sharp knife.
- > Cut the seal to length according to the roof hatch circumference.
- > Glue the seal all around and glue it to the joint. The joint must be sealed at the seam with SIKA adhesive (Picture 6 to Picture 8).



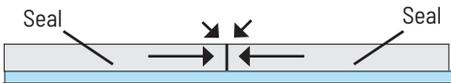
Picture 6

- > Retain approx. 100 mm of the protective paper at both the start and end of the seal.
- > Glue on the seal.
- > Keep approx. 100 mm of the protective paper at the joint and shorten the end of the seal apart from 15 mm overhang.



Picture 7

- > Remove the protective paper from the ends of the seal.



Picture 8

- > Seal the ends with SIKA adhesive, press together and stick on.

3.2 Inside of the driver's cab

3.2.1 Determine roof hatch dimensions

i NOTE

4 angle brackets are included in the scope of delivery. They serve to securely align and hold the system in the roof hatch. In addition, they protect the system from slipping in case of mechanical transverse or longitudinal loads during driving.

- > Measure roof hatch in transverse and longitudinal direction (Picture 9, Picture 10).



Picture 9



Picture 10

3.2.2 Mount 2 angle brackets in transverse direction

- > Transfer the transverse dimension of the roof hatch to the mounting positions of the 2 brackets on the right and left of the base plate of the system. To do this, use the matching screw holes in the base plate and the grid in the angle brackets according to the determined transverse dimension (Picture 11).



Picture 11

- > Fit 2 angle brackets on the right and left so that the system is centred on the roof hatch after insertion.

3.2.3 Insert Cooltronic 2000 Plus in roof hatch

- > Insert the Cooltronic air-conditioning system into the cutout in the roof hatch and centre it or align it as it is to be fixed later (Picture 12 and Picture 13).



Picture 12

1 Roof hatch cutout



Picture 13


WARNING!
RISK OF CRUSHING DUE TO LARGE WEIGHT

The air-conditioning system has a substantial weight and can cause crushing or bruising of the fingers and hands when inserted into the roof hatch.

→ Wear safety gloves.


NOTE

During operation, condensation can form inside the unit and run off to the right and left via the cabin roof.

3.2.4 Mount 2 angle brackets in longitudinal direction

> Align the system in the longitudinal direction as it is to be positioned after final assembly.


NOTE

- When aligning, make sure that the roof hatch cover fits after fixing the system and covers the roof hatch opening on all sides. If in doubt, test fit the cover and position the alignment correctly.

> Transfer the longitudinal dimension of the roof hatch to the mounting positions of the 2 angle brackets at the front and rear of the base plate of the unit. To do this, use the matching screw holes in the base plate and the grid in the angle brackets according to the determined longitudinal dimension (Picture 14).



Picture 14

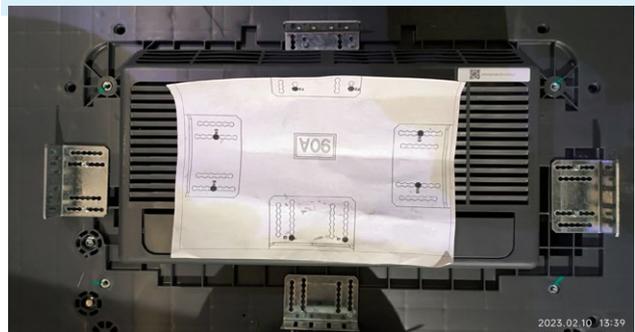
- > Fit two angle brackets at the front and rear so that the system lies in the desired position in the roof hatch after insertion.
- > Final assembly positions of all 4 brackets see Picture 15.



Picture 15


NOTE

Depending on the vehicle model and the number of systems to be mounted, a screw template can be used for mounting the angle brackets (Picture 16).



Picture 16

3.2.5 Mount the stud bolts

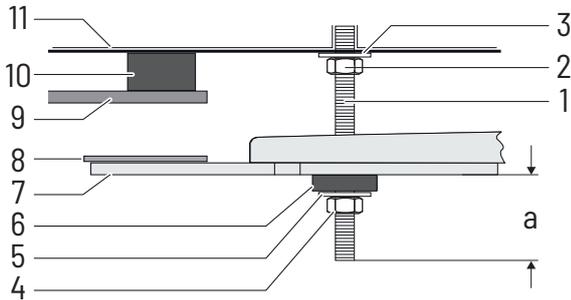
> Screw 4 M8 stud bolts, each with a washer, into the threaded holes of the base plate of the air conditioner as far as the stop of the preassembled nuts (Picture 17). The nuts on the bolts are fixed with threadlocker.



Picture 17

3.2.6 Mount the brackets

Picture 18 shows a cross-section of the stud and bracket assembly on the system.



Picture 18

- | | |
|------------------|---|
| 1 Stud bolt M8 | 7 Bracket |
| 2 Hexagon nut M8 | 8 Rubber pad |
| 3 Washer | 9 Cab roof |
| 4 Hexagon nut M8 | 10 Seal 25x30 mm |
| 5 Washer | 11 Cooltronic air-conditioning system baseplate |
| 6 Rubber buffer | a ca. 20 mm (after assembly) |

i NOTE

- The protruding length of the stud bolts when fixing the air conditioner depends on the thickness of the cabin roof.
- To be able to fix the inner panel after final assembly of the brackets, the protruding length of the stud bolts should be approx. 20 mm.

> Position 2 brackets (7) under the stay bolts (1) so that they rest on the car roof (9) at both ends.

i NOTE

On some vehicle models, the cab roof panelling may not leave room for the brackets to slide in. In this case, suitable cut-outs must first be made in the cab roof panelling.

- > For each bracket use 2 rubber buffers, 2 washers and 2 hexagon nuts M8 for fastening (Picture 18).
- > Place 4 rubber pads (8) under the protruding ends of the brackets on the cab roof panelling. This protects the cab roof panelling from mechanical damage caused by the brackets (Picture 19).



Picture 19

> Tighten four hexagon nuts under the brackets alternately so that the seal between the cabin roof and the system is com-

pressed circumferentially from 25 mm by approx. 6 - 7 mm to approx. 18 - 19 mm (Picture 20).



Picture 20

> Observe stud overhang (a) of approx. 20 mm under the brackets after the end of installation. Cut any excess lengths of the stud bolts to length. (Picture 21).



Picture 21

3.2.7 Mount the roof hatch cover

- > Cover the installation opening in the roof hatch with the roof hatch cover.
- > Secure the roof hatch panel to the 4 stud bolts with 4 washers and 4 hexagon nuts each. (Picture 22, Picture 23).



Picture 22



Picture 23

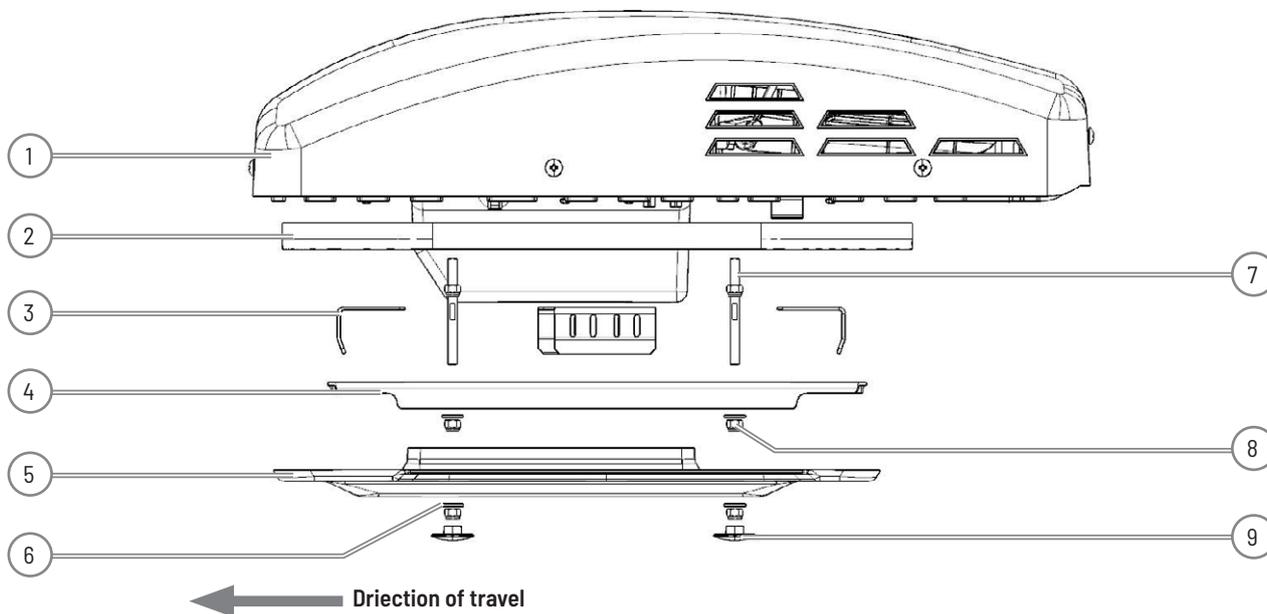
- > Close the assembly openings in the roof hatch panel with 4 rubber cover caps (Picture 24).



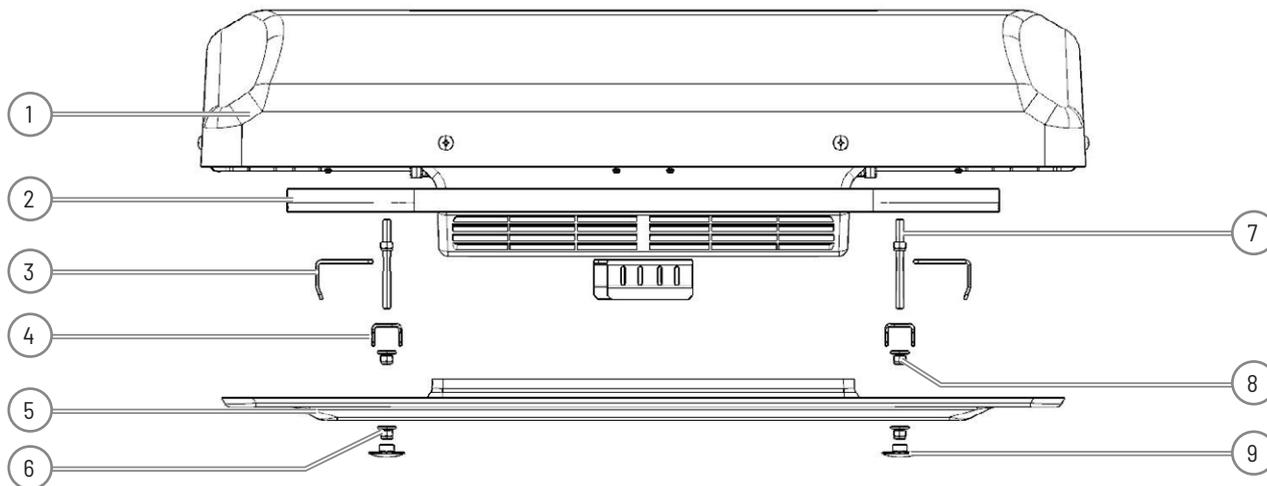
Picture 24

4 Drawings

4.2.1 Fixing the unit, side view



4.2.2 Fixing the unit, frontal view



- 1 Cooltronic 2000 Plus
- 2 Air diffuser
- 3 Cab roof
- 4 Bracket
- 5 Roof hatch cover

- 6 Nut M8 and washer
- 7 Stud bolt with nut M8
- 8 Nut M8 and washer
- 9 Rubber cap

5 Electrics

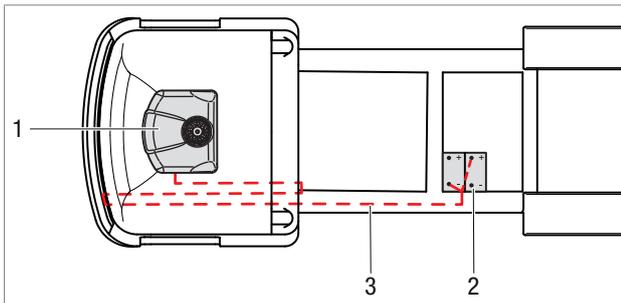
5.1 Connecting the power supply

NOTE

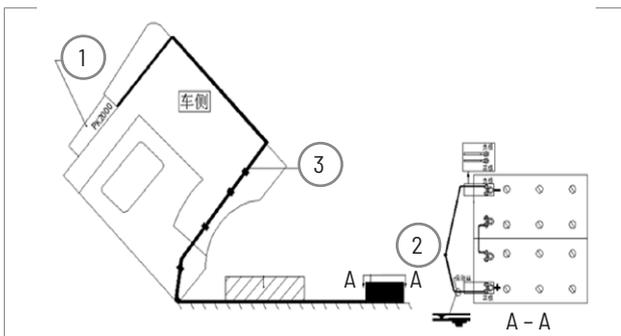
Follow the manufacturer's instructions regarding the electrical installation.

Connect the unit to the battery of the vehicle (Picture 25, Picture 26).

5.1.1 Connection to the battery



Picture 25



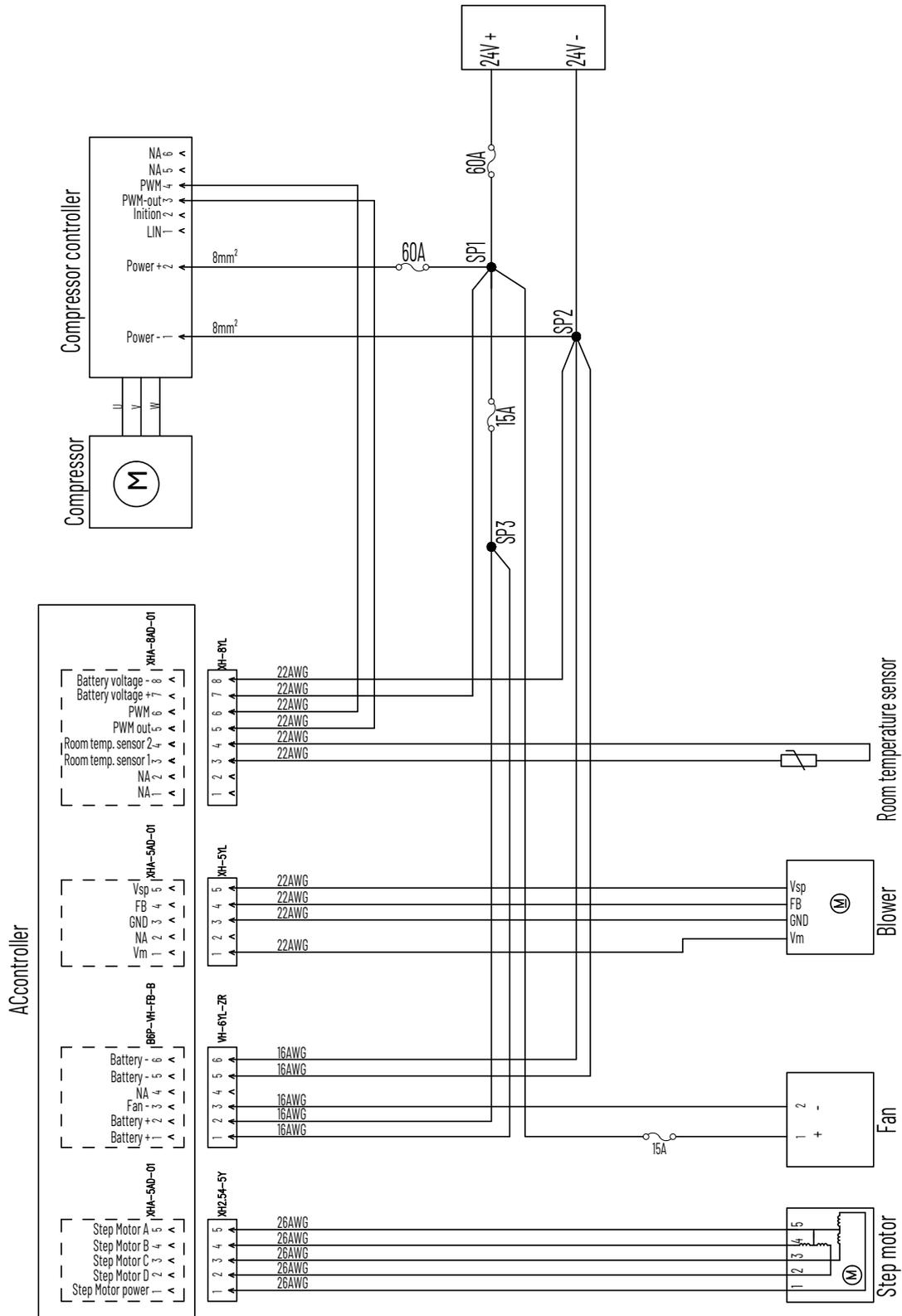
Picture 26

- 1 Cooltronic 2000 Plus
- 2 Battery
- 3 Anschlusskabel with Befestigungselementen

5.2 Circuit diagram

NOTE

The control unit and air-conditioning system only function if the power supply cable is connected correctly. Incorrectly connected cables cause irreparable damage to the unit.



6 Troubleshooting / Maintenance / Service

6.1 System fault

In the event of a fault in the system, go to an authorised Eberspächer repair shop and have the fault corrected with the help of the repair instructions document that also applies to the system.

6.2 Maintenance instructions

- To protect the seals switch on the air-conditioning system occasionally during the winter months.
- Remove the top plastic panel to clean the air-conditioning system with compressed air.
- Clean the condenser and drainage outlets of the air-conditioning system once a year
 - Remove the top plastic cover of the system (undo tapping screws)
 - Blow out the condenser with compressed air
 - Remove the drainage valves and clean inside

NOTE

Have maintenance work carried out only by an authorised Eberspächer workshop.

6.3 Service

6.3.1 Technical Support

If you have any technical questions or problems with the product, the control unit or the operating software, please contact the following service address:

support-DE@eberspaecher.com

In Austria please contact:

support-AT@eberspaecher.com

In Switzerland please contact:

support-CH-DE@eberspaecher.com

7 Environment

7.1 Certification

The high quality of Eberspächer products is the key to our success. To guarantee this quality, we have organised all work processes in the company along the lines of quality management (QM).

Even so, Eberspächer Climate Control Systems GmbH still pursues a large number of activities for continuous improvement of product quality in order to keep pace with the similarly constantly growing requirements of our customers.

All the steps necessary for quality assurance are stipulated in international standards. Quality is considered in a full, comprehensive sense. It concerns products, processes and customer-supplier relationships.

Officially approved assessors of a certification company assess the system and following the audit they issue a certificate.

Eberspächer Climate Control Systems GmbH has qualified for the following standards:

Quality management in accordance with ISO 9001:2015 and IATF 16949:2016

Environmental management system in accordance with ISO 14001:2015

7.2 Disposal

7.2.1 Disposal of materials

Old units, defective components and packaging materials can be separated into their individual materials so that if necessary, all parts can be disposed of in an environmentally friendly way or can be recovered and reused.

Dispose of the product only according to the relevant legal regulations. Electric motors, control boxes and sensors (e.g. temperature sensors) are deemed to be "electronic scrap". The refrigerant is subject to special disposal conditions.

7.2.2 Product packaging

The packaging of the product can be kept in case it has to be sent back.

